

**ABSTRACT**

A method and apparatus for improving the bandwidth efficiency of a constant envelope continuous phase modulation waveform and transmitting data in a bandwidth efficient manner is disclosed. The method and apparatus utilizes a non-constant envelope continuous phase modulation signal which possesses many of the advantages of a multiple modulation index continuous phase modulation signal. One such advantage is the natural trellis structure of a multiple modulation index continuous phase modulation signal. In comparison to a constant envelope continuous phase modulation waveform, the non-constant envelope continuous phase modulation signal possesses a reduced transmit signal spectra and may also be demodulated by a standard maximum likelihood demodulator without any loss of performance.